

California Monthly Climate Summary October 2012

Weather Highlights

October 2012 was a hot, dry month for California. According to the Western Region Climate Center's [California Climate Tracker](#), the monthly average temperature was 60.2°F which is 1.9°F higher than the long-term average of 58.3°F. This is the sixteenth warmest October in 118 years of record and the 3rd year in a row that October was above the 1949-2005 average. With a statewide average of 0.64 inches, precipitation was 52% of average and is the 39th driest October in 118 years of record. Plots of the last 12 months of mean temperature and precipitation relative to the historical distribution are shown at the end of the report. Regional ranking plots are also shown.

October started with high pressure sitting over California bringing hot dry conditions with temperatures over 100°F in many places. A low pressure system moving towards northern California at the end of the first week brought cooler conditions but no precipitation. Precipitation kicked in during the second week of the month with a low pressure system sliding down the State. Some thunderstorm activity was associated with this event. As the low moved inland over Southern California widespread rain and showers followed into the desert regions of the State. The third week started with high pressure building behind the exiting low pressure system bringing dry, mild weather. The next weather system to impact California moved in mid-week with rain for the North Coast and windy conditions for part of the Central Valley. The very dry conditions for Southern California associated with this weather pattern were eased as the remnants of Hurricane Paul moved north from Mexico. Increased humidity and some showers resulted. The final week of October saw a cold front sweep in from the Gulf of Alaska bringing widespread rain and mountain snow to the northern part of the State. Higher elevations in the Sierra reported up to 2 feet of snow from this event. A surface high in the Great Basin created Santa Ana wind conditions in Southern California prompting red flag warnings.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 76 temperature records tied or broken and 6 precipitation records set or tied for the month. The San Diego Weather Forecast Office recorded records on 11 days of the 13 days records were set in California for October 2012. Of the 76 temperature records set in October, 41 were for new high maximum temperatures and 32 were for new high minimum temperatures. One of the odder high temperature records was set in Santa Monica on October 18th when the high temperature reached 83°F breaking the old record of 80°F set back in 1968. The new record is odd in that the high temperature was reached in the early hours of the morning as a northeast wind brought temperatures up in the night. Temperatures then cooled into the 70s for the daylight hours. Death Valley set a new 24 hour precipitation record for October 11th when 0.49 inches of rain fell. The old record was 0.10 inches set in 1928. Annual rainfall in Death Valley averages 2.24 inches. On October 17th Red Bluff broke a 1936 high minimum temperature record with a reading of 66°F. The old record was 63°F.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 109 stations recorded a minimum temperature below freezing while 60 stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC stations is also shown at the end of the summary.

Precipitation in October was below average for most of the entire State. For the CDEC precipitation gages, the largest amount of precipitation recorded was at Gasquet Ranger Station in the North Coast region with 6.82 inches. This is 91% of the average precipitation for this station for the month. At the other end of the spectrum, only 2 stations reported zero precipitation for the month. For the CIMIS network, Fresno State in Fresno County topped the precipitation charts with 2.95 inches for the month and 36 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network.

The 8-Station Index for northern California precipitation recorded 2.7 inches in October. On average, 3.0 inches of precipitation is recorded for the 8-Station Index for the month. Statewide, the average precipitation for the month was 85% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

October 2012 begins California's 5th year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns. A map from October 23rd, 2012 is shown at the end of the document. Currently, California has 921 volunteers signed up spanning 53 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, Modoc, and Tuolumne. The county with the most volunteers is Sonoma with 94 volunteers. For the month of October, 10,215 reports were recorded for California. The largest daily rain total for CoCoRaHS- CA for the month was in Del Norte County where 3.60 inches was recorded on 10/16/2012. Twenty-two snow reports were filed with the largest daily snowfall of 19 inches reported on 10/23/2012 in Placer County. Three hail reports from three different Counties were entered. Monterey County reported quarter inch sized hail on 10/10/2012, Shasta County recorded quarter inch sized hail on 10/22/2012, and Nevada County recorded half-inch sized hail on 10/23/2012. For more information on CoCoRaHS, please visit <http://www.cocorahs.org>.

Snowpack and Water Supply Conditions

The WSI for WY2012 for the Sacramento Basin fell into the below normal category and the San Joaquin fell into the dry category. Water supply information for California can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year categories for both basins can be found at <http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST>.

Extreme Precipitation Monitoring Network

The National Oceanographic and Atmospheric Administration (NOAA) Earth System Research Laboratory (ESRL), Scripps Institute of Oceanography, and the California Department of Water Resources have been working on the installation of new observing equipment to monitor characteristics of extreme precipitation events associated with atmospheric rivers. Initial data is starting to flow from this network and some data is available for the precipitation events that occurred in October of 2012. Some samples are shown here for the rainfall event between 10/20/2012 and 10/22/2012 when 47% of the monthly total of the 8-station index precipitation fell. The first image is the snow level radar placed at Colfax, CA in the American River watershed. The image shows the passing of the front and subsequent drop in snow level during the event. The radar shows 11 hours of precipitating conditions with the snow level dropping from 6740 feet to 4988 feet in one hour. Ten of twelve sites with this type of instrumentation are installed and operating. The second image shows a map of atmospheric water vapor monitoring sites in California with readings from 10/22/2012. Values over 2 cm extend from the coast inland to the Sierra Nevada showing the width and direction of the main moisture paths associated with this event. Approximately 40 atmospheric water vapor monitoring sites will be installed with this effort. More instrumentation will be coming online this winter including an atmospheric river observatory at Bodega Bay in the beginning of December. More information from this network will be presented in the coming months. Data can be viewed on the NOAA ESRL website: <http://hmt.noaa.gov>.

Drought Monitor and Seasonal Outlook

The maps for California for September 25, 2012 and October 30, 2012 are shown below. The Drought Monitor maps can be found on the National Drought Mitigation Center's (NDMC) website <http://drought.unl.edu/dm/>. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the October 30th depiction, 1.14% of the State is depicted in the D3 or extreme drought category, 17.96% of California is depicted in the D2 or severe drought category, 49.38% of California is depicted in the D1 or moderate drought category. An additional 24.79% of the state is depicted as D0 or abnormally dry. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for November through January from NOAA depicts California with some improvement in drought conditions throughout most of the State with persisting drought conditions expected in the southeast part of the State. This forecast is based primarily on climatology and forecast models. Visit http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html for more information. Updates are provided twice per month.

For more information on drought conditions in California, visit <http://www.water.ca.gov/waterconditions/>. A table showing end-of-October reservoir storage by hydrologic region is shown at the end of this document.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) has transitioned to neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have moved towards positive values with the Niño 3.4 region posting a reading of 0.5°C anomaly at the end of October. The August through October 3-month running mean of the Ocean Niño Index (ONI) is 0.4. Five consecutive ONI values need to be above the 0.5 threshold need to be observed for classification as an El Niño event (five consecutive values below the threshold of -0.5 for conditions to be classified as a La Niña event). Most forecast models have the tropical sea surface temperatures moving to neutral conditions during the remainder of 2012 and early 2013. More information can be found at the Climate Prediction Center's web site: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/. Updates are posted weekly. The latest three month outlook (November through January) from NOAA indicates equal chances of above average, near average, or below average temperatures for the whole State except the south Lahontan region which is expected to have a greater chance of above-normal temperatures. For precipitation, equal chances of above, near, or below normal precipitation are forecast for the southern half of the State while the northern half of the state is forecast to have an increased probability of below normal precipitation. Outlook plots and discussions can be found at <http://www.wrcc.dri.edu/longrang/>. General weather information of interest can be found at <http://www.noaawatch.gov/>. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

October 2012 saw harvest in full swing across the State. Cotton and rice crops were harvested with cotton being rated mostly good to excellent. Alfalfa continued to be cut and baled. Kiwi, pomegranate, persimmon, apples, pears, quince and wine grapes were picked in October. Rain interrupted some harvests for a few days but did not appear to impact the crops. Almond harvest finished while walnut and pistachio harvests continued. Vegetable harvests of eggplant, cucumbers, peppers, squash, tomatoes and other vegetables continued. Some planting of winter vegetables began with some fields already starting to emerge. Range conditions continued their deterioration with rains indicating some easing of conditions possible. Supplemental feeding continued to increase. Sheep and cattle were moved from higher elevation pastures for winter. Fire danger remained high. For further crop information see <http://www.nass.usda.gov/index.asp>.

Other Climate Summaries

[California Climate Tracker](#) (new product of Western Region Climate Center)

[Golden Gate Weather Service Climate Summary](#)

[NOAA Monthly State of the Climate Report](#)

Statewide Extremes (CDEC)

High Temperature – 112°F (Beverly Hills, South Coast)

Low Temperature – 7°F (Charlotte Lake, Tulare Basin)

High Precipitation – 6.82 inches (Gasquet Ranger Station, North Coast)

Low Precipitation – 0.0 inches (2 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 93.1°F (UC San Luis, Imperial County)

Low Average Minimum Temperature – 28.9°F (Alturas, Modoc County)

High Precipitation – 2.95 inches (Fresno State, Fresno County)*

Low Precipitation – 0 inches (36 stations)

*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Oct	Oct-Oct	Stations	Oct	Oct-Oct	Oct	Oct-Oct
North Coast	0.27	5	5	5	17	7	7	77.5%	78%
SF Bay	0.03	2	1	1	6	1	1	66.0%	66%
Central Coast	0.06	3	3	3	11	6	6	31.6%	32%
South Coast	0.06	3	3	3	14	12	12	67.9%	68%
Sacramento River	0.26	5	5	5	42	28	28	83.4%	83%
San Joaquin River	0.12	6	6	6	24	16	16	66.4%	66%
Tulare Lake	0.07	5	5	5	28	24	24	65.4%	65%
North Lahontan	0.04	3	3	3	13	6	6	72.2%	72%
South Lahontan	0.06	3	1	1	15	2	2	257%	257%
Colorado River	0.03	1	1	1	6	2	2	109%	109%
Statewide Weighted Average	1	36	33	33	176	104	104	84.7%	85%

Statewide Mean Temperature Data by Hydrologic Region (degrees F)

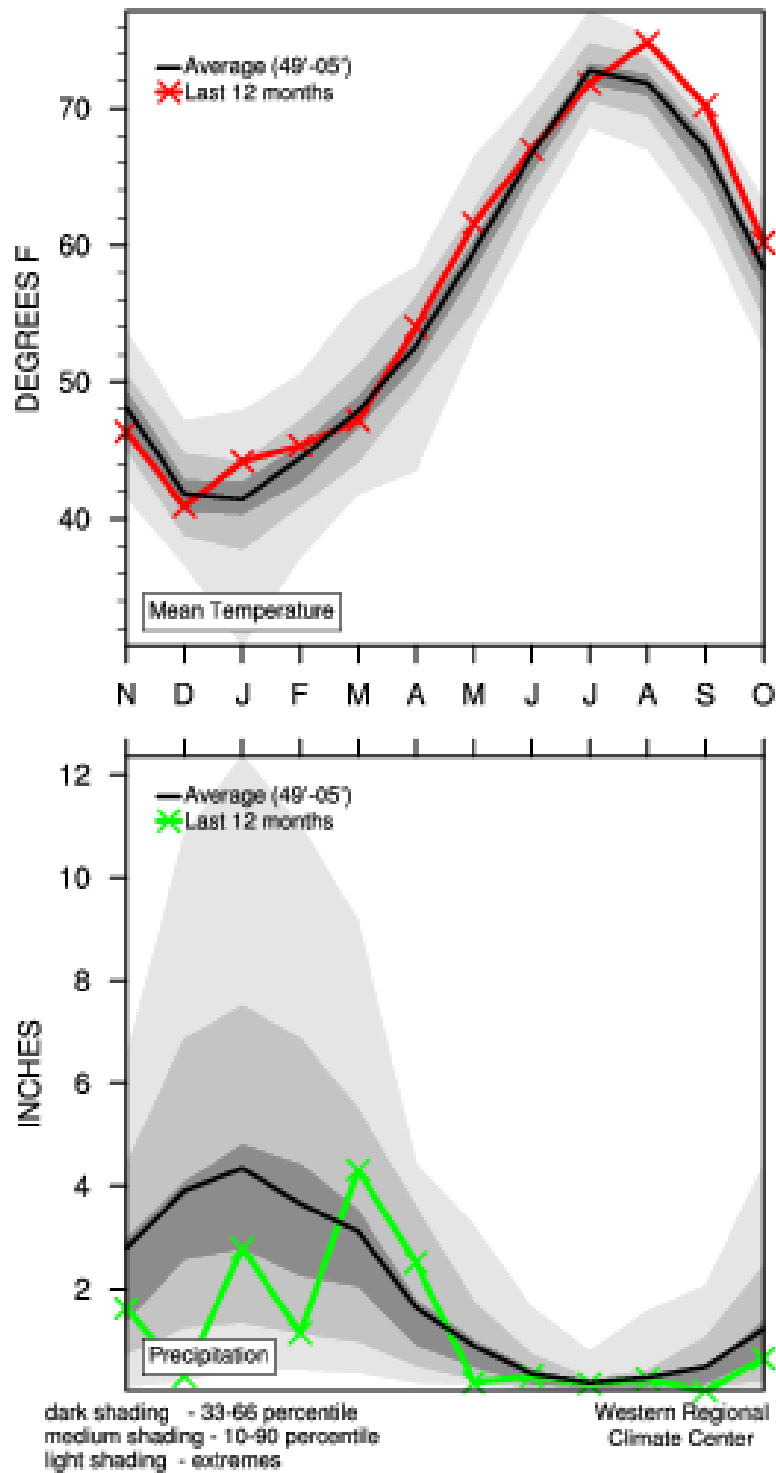
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	18	31.7	55.0	91.6
SF Bay	10	42.8	60.7	95.4
Central Coast	11	38.8	62.4	98.8
South Coast	41	43.7	65.7	100.5
Sacramento	68	33.2	56.4	92.1
San Joaquin	38	32.7	55.0	89.1
Tulare Lake	17	27.9	51.6	81.6
North Lahontan	23	21.7	45.8	74.4
South Lahontan	13	29.0	52.7	83.8
Colorado River Desert	7	47.8	74.3	106.8
Statewide Weighted Average	246	33.3	56.5	91.1

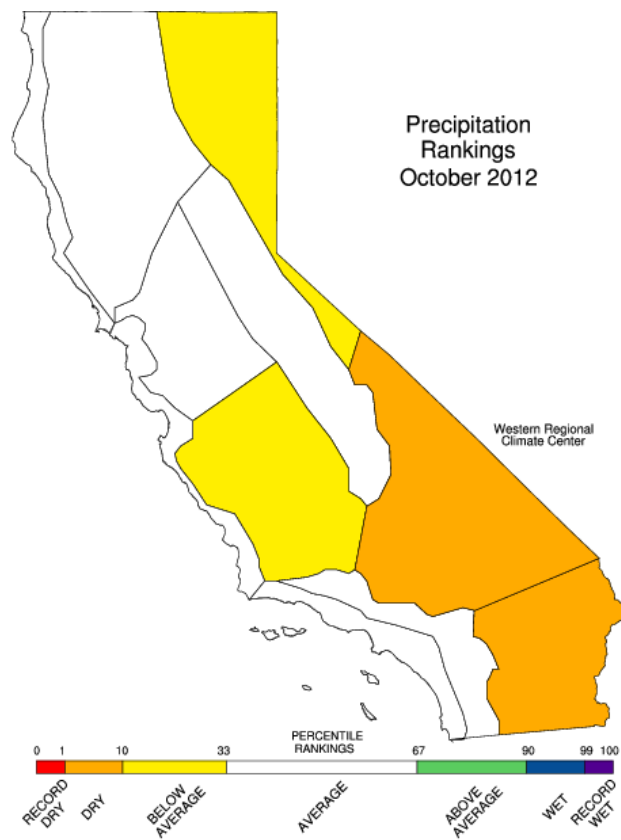
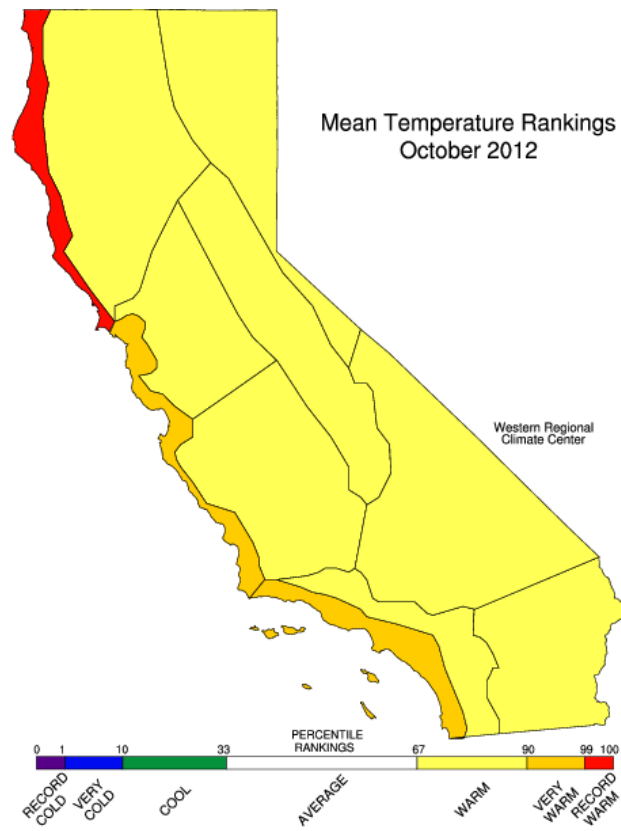
End-of-October Reservoir Storage by Hydrologic Region **Storage in Thousand Acre-Feet (taf)**

End-of-July Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2012 Storage (taf)	% of Average
North Coast	6	1,894	2,045	108%
San Francisco Bay	17	402	412	102%
Central Coast	6	524	482	92%
South Coast	29	1,285	1,207	94%
Sacramento	43	9,493	9,052	95%
San Joaquin	34	6,176	5,821	94%
Tulare	6	637	387	60%
North Lahontan	5	465	527	113%
South Lahontan	8	272	235	86%
Total	154	21,151	20,171	95%

California Climate Tracker Images

California Statewide Last 12 Months



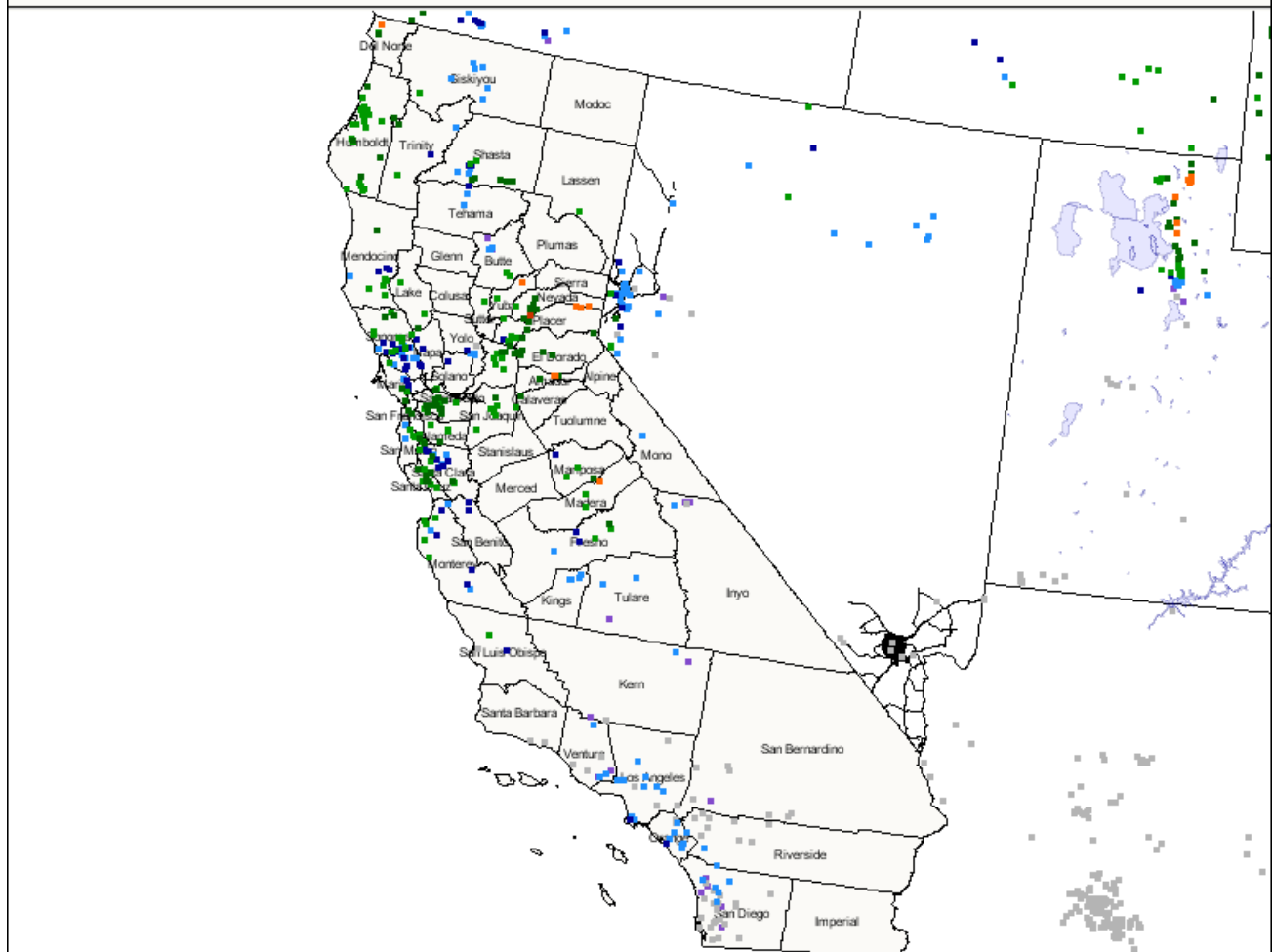


CoCoRaHS Map

Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am

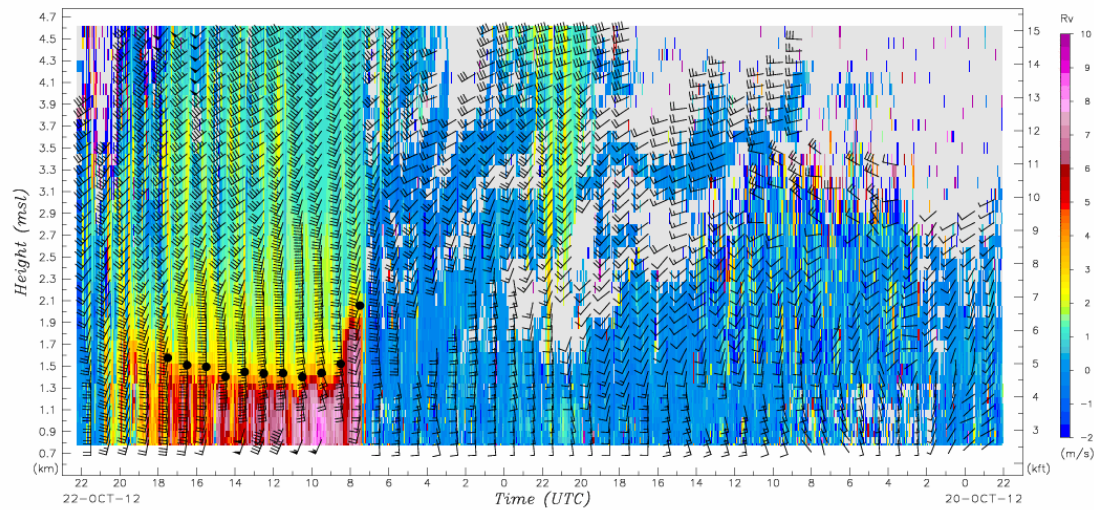
California 10/23/2012

0.0 Trace 0.01 - 0.12 0.13 - 0.24 0.25 - 0.59 0.60 - 1.40 1.41 - 2.09 2.10 - 2.31



Extreme Precipitation Monitoring Network Images

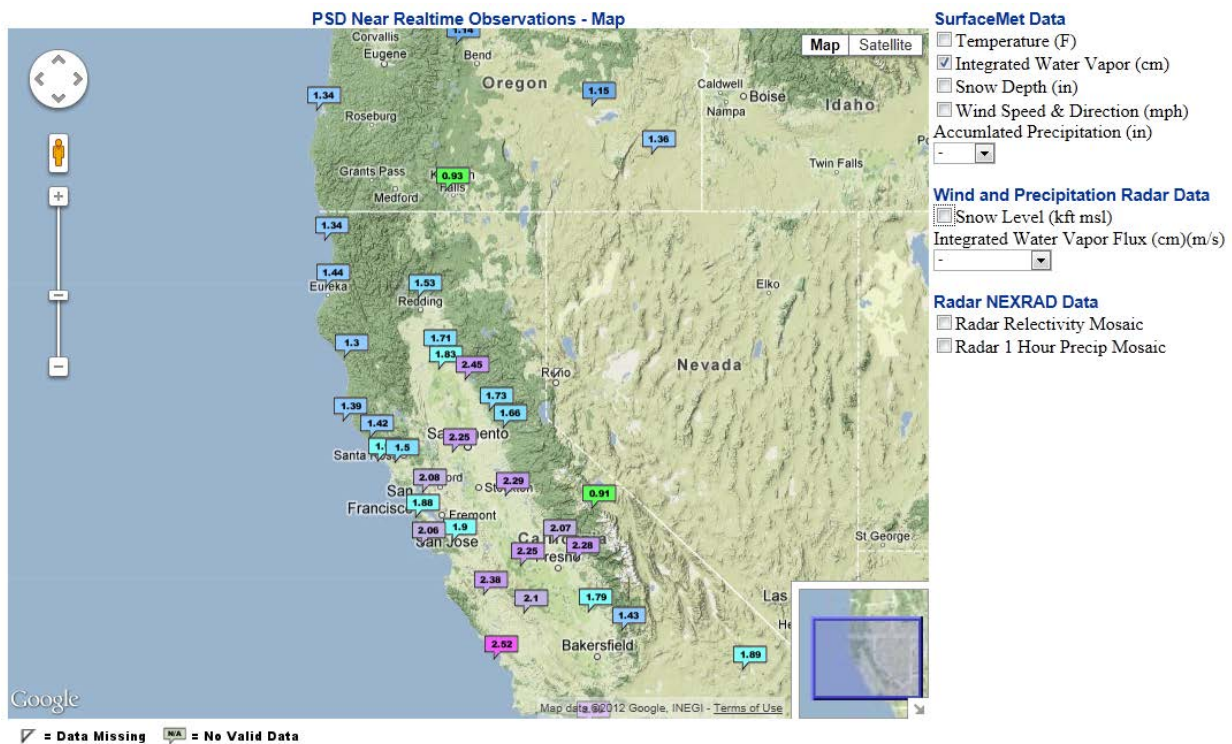
ESRL Physical Sciences Division
915-MHz Wind Profiling Radar



Colfax, CA (CFC)
39.08 N, 120.94 W, 644 m

Time (UTC)	2130	2030	1930	1830	1730	1630	1530	1430	1330	1230	1130	1030	0930	0830	0730	0630	0530	0430	0330	0230	0130	0030	2330	2230
Snow Level (m)	none	none	none	none	none	1576	1510	1494	1404	1447	1433	1436	1399	1438	1521	2055	none	none	none	none	none	none	none	none
Snow Level (ft)	none	none	none	none	5169	4952	4900	4605	4746	4700	4710	4588	4716	4988	6740	none	none	none	none	none	none	none	none	none
Sfc Temp (C)	7.55	7.52	7.15	7.00	6.70	6.57	6.40	6.30	6.28	6.11	5.96	6.11	6.25	6.56	8.63	8.82	8.92	7.81	6.42	7.20	10.18	13.66	15.40	15.62

Time (UTC)	2130	2030	1930	1830	1730	1630	1530	1430	1330	1230	1130	1030	0930	0830	0730	0630	0530	0430	0330	0230	0130	0030	2330	2230
Snow Level (m)	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none
Snow Level (ft)	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none
Sfc Temp (C)	15.10	14.81	14.60	14.00	12.64	10.49	8.42	7.36	7.33	7.51	7.76	7.65	8.10	8.32	8.73	9.13	9.78	10.63	11.75	13.60	16.47	19.44	21.02	22.47



U.S. Drought Monitor

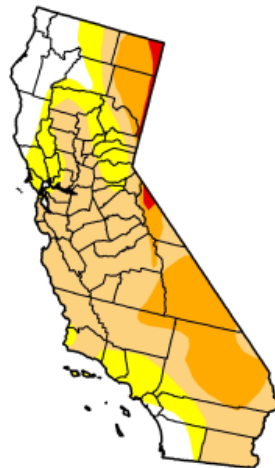
California

September 25, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	11.95	88.05	69.41	22.27	1.14	0.00
Last Week (09/18/2012 map)	11.95	88.05	69.09	22.27	1.14	0.00
3 Months Ago (06/26/2012 map)	15.89	84.11	59.51	22.76	0.00	0.00
Start of Calendar Year (12/27/2011 map)	33.91	66.09	5.41	0.00	0.00	0.00
Start of Water Year (09/27/2011 map)	89.14	10.86	0.00	0.00	0.00	0.00
One Year Ago (09/20/2011 map)	89.14	10.86	0.00	0.00	0.00	0.00

Intensity:

D0 Abnormally Dry	D3 Drought - Extreme
D1 Drought - Moderate	D4 Drought - Exceptional
D2 Drought - Severe	



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, September 27, 2012
Anthony Artusa, NOAA/NWS/NCEP/CPC

U.S. Drought Monitor

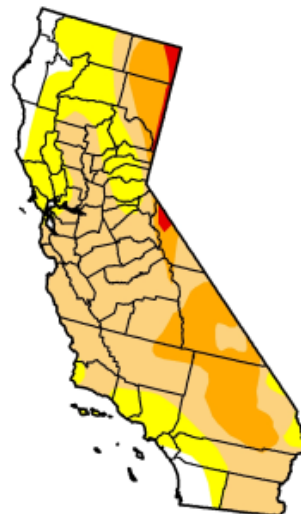
California

October 30, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.73	93.27	68.48	19.10	1.14	0.00
Last Week (10/23/2012 map)	6.75	93.25	68.48	19.10	1.14	0.00
3 Months Ago (07/31/2012 map)	11.64	88.36	63.80	23.60	0.29	0.00
Start of Calendar Year (12/27/2011 map)	33.91	66.09	5.41	0.00	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (10/25/2011 map)	89.25	10.75	0.00	0.00	0.00	0.00

Intensity:

D0 Abnormally Dry	D3 Drought - Extreme
D1 Drought - Moderate	D4 Drought - Exceptional
D2 Drought - Severe	



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, November 1, 2012
Michael Brewer, National Climatic Data Center/NOAA